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A

TREATISE

ON THE

MAGNETISM OF THE NEEDLE,

The Reason of its being North and South;

ITS DIPPING AND VARIATION;

WITH OBSERVATIONS ON THE SUN,

THE VELOCITY OF LIGHT,

&c. &c.

By GEORGE CLARKE, F. A. S.
SURREY.

London:

PUBLISHED BY J. ROBINS AND CO. ALBION PRESS, IVY LANE, PATER-
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The Reason of it being North and South;

ITS DIPPING AND VARIATION;

ON THE

GREAT LUMINARY, OR RESERVOIR OF LIGHT,

called

THE SUN;

THE PROPERTIES OF LIGHT;

A Reasonable Supposition

ON THE

Cause, or Agent, which the Great Author of Universal Nature employs to keep the various Orbs in their respective situations, and connect their Influence with each other:

ON THE

ERRONEOUS CALCULATION OF THE VELOCITY OF LIGHT;

The Chemical Process

WHICH UNINTENTIONALLY LED TO THIS INVESTIGATION.

By GEORGE CLARKE, F.A.S.

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1818.

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DEDICATION.

TO THE
RIGHT HONORABLE SIR JOSEPH BANKS, BART. K.B.
President,
WITH THE
NOBLE LORDS AND HONORABLE MEMBERS
OF THE
ROYAL SOCIETY.

* * *

GENTLEMEN,

Your Honorable Society being instituted for the express and laudable purpose of benefitting this Kingdom, and improving the Universe, by the reciprocal reception and diffusion of knowledge, permit one of its individuals, conscious that *more* is required of the subject than merely to obey the laws, to present the following TREATISE for your candid and liberal perusal: should the result be your approbation, and the benefit of His Majesty's realm, at this period of national investigation, connected with the Northern Discovery Ships, it will confer an honour and obligation on,

Honored Sirs,

Your most obedient humble Servant,

GEORGE CLARKE.

High Street, Borough, Southwark,
Late of Bermondsey Street, Chemist, &c.

INTRODUCTION.

THE Wise Disposer of events has so ordered the affairs of mortals, that our partial ignorance is the life of society. Were it possible for a company to meet, and each individual to be possessed of universal knowledge, their conversation would be uninteresting and communication insipid; conscious, therefore, of the imperfection of my attainments, I do not presume to lay open, or be acquainted with, the whole arcana of Nature, but to add *my mite* to the general fund of knowledge, as a tribute due to society. In prosecuting this Work, I must *unavoidably* make some remarks on the various opinions of authors, but in so doing, it is not intended to depreciate their abilities, undervalue their communications, or censure their motives, *but their doctrine, so far as I conceive them to be erroneous.*

I shall now proceed, according to the following order:

FIRST, The Chemical Process which, *unintentionally*,* led to this investigation.

SECOND, On the Great Luminary, or Reservoir of Light, called the Sun.

THIRD, The Properties of Light.

FOURTH, The Cause of the Magnetism of the Needle, the reason of it being North and South, its Dipping and Variation.

FIFTH, A reasonable Supposition on the Cause, or Agent, which the Great Author of universal Nature employs to keep the various Orbs in their respective Situations, and connect their influence with each other.

SIXTH, Observations on the erroneous Calculation of the Velocity of Light.

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* "The fall of an apple taught a NEWTON."

The Chemical Process which, unintentionally, *led to this Investigation,—On the Great Luminary, or Reservoir of Light, called the Sun,—and the Properties of Light.*

Having made a quantity of the muriat of silver, for a particular purpose, and being hastily called from the laboratory, I unthinkingly placed it at the window, in the rays of the sun; on my return, the snow-white muriat was changed to black, by the loss of the oxigen, and revival of the metal: this circumstance was by *no means new,* nor the general effects of light unnoticed, but I never turned my attention to investigate the cause till now: a chain of thoughts, more rapid than my pen could communicate, presented in the order before mentioned; but as theory is often delusive, it was my wish to establish with experiments, and trace the nature of things to their origin. Though I have read many authors, not any appeared to give the nature. It was not until *creation* had made considerable progress, that the *sun* was created, on the *fourth* day, as a receptacle, or, if I may be allowed the expression, a storehouse for the light: thus it appears that the sun is not the *original* cause of light, and also that it is not what we commonly term fire. As a proof, interpose a plate of glass between the object and the fire of a glass-house furnace, the plate will become hot, but not communicate the heat: not so in reference to the sun; the glass remains cold, but the object receives the *effects* of heat, by the concentration of the power of attracting oxigen. *Metals*, calcined by fire, increase in weight by the absorption of oxigen: thus lead converted into minium increases one nineteenth part: the application of light deprives them of it.

The cause of the Magnetism of the Needle, the reason of it being North and South, its Dipping and Variation.

From the foregoing, and many other experiments, it is evident that the *Sun* attracts oxigen in a powerful manner; the next inquiry is, what terrestrial thing contains the most oxigen? *as on that article the attraction* will act with the greatest power. This is IRON and its ores, which "is one of the most generally diffused metals in nature; almost every mineral substance of this globe is coloured with it, and the various alterations produce that truly astonishing variety of colours, which are comprehended between the blue and the deepest red; it likewise exists in the vegetable kingdom, where it constitutes an almost inseparable principle; it even appears to be one of the products of organization, or vegetation, for it is found in vegetables *which are supported merely by air and water*, and it has such an analogy with our organs, that it appears to constitute one of the elements of the *human frame*," M. J. A. Chaptal, vol. 2.

p. 326, 383. *The Sun's path at the Equator* being East and West, it is evident that its attraction of oxigen must be North and South, and constitutes the Magnetism of the Needle. As a proof, take a piece of steel, not too much tempered, heat it almost to redness, lay it on the earth in an open place, North and South, when cold it will be magnetic; not so if it cools East and West. On placing a needle, powerfully magnetic, with its North to the earth's South, it will in a little time become weak, and at last have its poles reversed. At sea, it has frequently been observed, that the compass, being exposed to the effects of lightning, has had its poles reversed. *Is not this almost a proof*, that lightning, the electric fluid, and *disengaged* oxigen are nearly allied? *Perhaps, hereafter they may be found to be the same.*

I conceive, the *Dipping* of the Needle may be accounted for from this consideration, that the attraction at the Equator is *perpendicular*; the more the compass diverges to the North or South, the rays of attraction *form* an hypothenuse; the Magnetic Needle being placed on a pivot, that point next to the Equator will naturally take that direction, and the opposite point dips.

TAKING IT FOR GRANTED that the aforesaid statement is correct, then it follows as a matter of course, that the Magnetism of the Needle must be *local* as it respects this globe, *and independent of the Polar Star;* and that the *gradual Variation of the Needle*, must be the result of a *new position* of the Earth, in reference to the *Sun and Polar Star*, namely, South-Easterly and North-Westerly, in lieu of East and West. This also may account for the variations in the climate of the *same tract*, which have been observed within a few years, and the uncommon breaking up of the ice. To object, the impossibility or improbability, on supposition, that if the variation continue to increase,* the effects may prove disastrous, would be to limit *the power*, and call in question the *benevolence of the Creator*, who has a grander motive and nobler end in view, than to frighten mortals, that is, his own glory, connected with the welfare of the universe.

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* In directions given from the Trinity House, dated October 1795, for sailing by the Long Ships' Light, remarks the Variation of the Magnetic Needle upon the "Lands' End, in May 1795, Lat. 50° 4½ North, was 25°½ Westerly."

A Reasonable Supposition on the Cause or Agent, which the Great Author of universal Nature employs to keep the various orbs in their respective situations, and connect their influence with each other.

So far as this investigation goes, the SUN appears to be the universal point of ATTRACTION; if so, it cannot be of GRAVITATION; otherwise all the orbs would rush on the Sun by a double power, *attraction* and *gravitation*. It follows then of course, that the gravity of Mercury must be considerably less than that of this Earth, and the oxigenous principle also; otherwise the attraction would overpower the gravity, and it would rush on the Sun. Thus, the temperature of Mercury, *instead* of being sufficient to cause the *ebullition* of water, and the coldness of Saturn, beyond our comprehension, *may each* be the same *as the globe we inhabit;* the gravity of Saturn placing him farther, the oxigenous must be encreased; thus by the *astonishing precision* in adjusting the gravitating and oxigenous principle, the orbs are preserved in their respective situations. Taking it for granted that the above statement in reference to the *universal principle of oxigen* is true, and that each orb, and all things thereon, partake of a certain portion different from the rest, does not this in *some measure,* account for their influence on *each other*, in their various revolutions? *We see this exemplified* by the Moon, on animate and inanimate beings, why should it be denied to the rest? *Without presuming* to question the wisdom or power of the Almighty, this appears to be more consistent with philosophy than any other hypothesis I have yet seen.

Observations on the erroneous Calculations of the Velocity of Light.

That this subject should have escaped a more close investigation before it was so universally received, I am at a loss to account for, otherwise than that both in *Divinity* and *Philosophy*, a sort of *magic charm* is attached to the names of great men, which fetter our understanding; to call in question the tenets of the former is called *presumption* and *heresy*, of the latter *arrogance;* these epithets intimidate, and the fear of being thought *singular*, deter many from speaking or writing their sentiments; the consequence is, a claim to *infallibility!* I have more than once experienced such contempt; but as every mortal is only accountable to God for his conduct, *provided* it is not injurious to society, I feel that *independent spirit*, which I hope will always *characterize a Briton*, in his attempt, *however weak*, to diffuse that knowledge which he conceives to be beneficial to mankind. This being a digression, I must intreat the reader's sympathetic indulgence, and proceed.

The Velocity of Light is estimated at two hundred thousand miles in a second of time, which is near a million times swifter than the velocity of a cannon ball!! This statement is easier written than conceived. *Light* was created on the first day, and the *Sun* on the fourth, since which period, the whole *expanse of creation* has been filled with Light, as the ocean is with water, and the different orbs *immersed* therein. When it is night with us, the rays of Light play with their full force on our antipodes, as they did on the *day* the Sun was created, *without any vacuity;* consequently, the Earth in its revolution, meets those rays which already play upon the surface of our antipodes, which, when first discovered, are not more than about one fourth of the Earths' diameter distant, and for any thing we know to the contrary, have been on their journey from the creation. *As that parcle of Light* nearest the Sun, must of necessity displace every other between it and this orb, before it can reach our Earth, therefore its velocity cannot be ascertained; if it could, I do not conceive it would be of any utility.

An author observes, that "the particles of Light are so *surprisingly* small, that they are almost beyond conception, *for it has been computed!!!* that there fly out of the end of the flame of a burning candle *in a second of time*, ten thousand millions of times more particles of Light than *there are visible grains of sand in the whole Earth!!!*" I shall only remark, that it is a truth, within the reach of common observation, that mankind in general are more taken with the *marvellous* than plain reasoning and matter of fact. Thus the famous Microscoptic Visionary perceived in the *single seed* of a tree, woods and forests in *sightless* miniature, and in animal semen whole empires rise; forgetting that *each* are the results of combination and composition *not included therein,* but *added* thereto after life is infused.

An attempt to rescue the character of *some* of the ancient chemists (not all) from the imputation of ignorance and imposture, by a few remarks on the term Transmutation.

The foregoing treatise, tracing the structure of this globe we inhabit to its origin, and in a manner pointing out the rudiments and composition of all terrestrial things, I shall avail myself of this opportunity (and feel a pleasure if success attend the effort) to endeavour to explain this subject, and set at rest a controversy which has separated friends, and sown discord in the society of men, whose scientific pursuits should have united for public benefit; much has been written on this subject to prove its reality, and others have treated it with contempt, as chimerical and the effects of insanity. This difference of opinion, I presume, arises from a misapplication of the term and want of comprehension of each others' ideas. Many authors of the greatest respectability, whose integrity on other subjects have not been questioned, have affirmed the fact, and like Peter John Faber, assert, "God himself is witness to the truth." The celebrated Becher, is a name which alone suffices to render this sect respectable; divesting ourselves of prejudice, can we for a moment suppose them deficient in integrity after such a solemn appeal? The perfection to which the present chemical nomenclature has attained, is a proof of the former defect in chemical language to convey ideas; if so, is it at all surprising that two men pursuing the same studies, and possessing equal abilities, should mistake each others' meaning, especially when it is *not intended* for the preparation to be universally known? It appears as afore-stated, that *Earth*, (I mean elementary Earth, the gravitating and ponderous principle) *Water* (hydrogen and oxigen) and *Light*, are the origin of the mineral, vegetable, and animal kingdoms; it follows of course, that all bodies are compounds, *Gold not excepted;* to produce which it is only requisite to know its component parts; that its colouring matter may be separated I have more than once seen performed, and the body left nearly of a silver colour; and, what is remarkable, the menstruum which separated the colouring matter, if cohobated with it on the residuum, it will be more fixed than before, so that the same or fresh menstruum will not be able to separate it again. Thus Transmutation, according to the common acceptation of the word, may be performed; but properly speaking it cannot, because the elementary principles continue the same. Thus hydrogen and oxigen united is *transmuted* into water, *according* to the ancient mode of speech; this the moderns deny, because the elements *hydrogen* and *oxigen* remain unaltered; thus they both agree as to fact, but not phraseology.

In addition to these remarks, "I must observe, that chemical phenomena is become so wonderful, the torch of analysis has enlightened us to such an extent, we now decompose and reproduce so many substances, which thirty years ago were considered with equal probability as indecomposible as Gold is now thought to be, *that no Chemist* can take upon him to affirm, that we may not arrive at the art of imitating Nature in the formation of metals," M. J. A.Chaptal, Elem. Chem. vol. 2, p. 457. If a possibility and probability of attaining to the formation of metals at some future period are admitted, why should it be denied to *some few* of the ancients, who it is evident excelled the moderns in many respects, in reference to the mineral kingdom; the ambiguity of whose writings appear to be the effect of design, arising from a conviction, that were the process generally known, it would prove a *curse* to society, instead of an individual benefit, which is the intention. I shall now conclude with the words of Jean Ray, M. D. of Perigord (1630) La travail a été mien: le profit en fait an lecteur, et à Dieu seul la gloire.

GEORGE CLARKE.

POSTSCRIPT.

Notes on page 9.

"Conceive that the muriat of soda is the basis of alkalies and acids."

If a vegetable, (say Willow) which has been supported merely by water, be analized, potassæ is procured; from whence can this come but from the water, wherein the muriat of sodæ is held in solution, though it may be in quantity small?

Having purchased some muriatic acid at Apothecary's Hall, I drew it over from an article taken out of the mineral kingdom, not containing any saline or sulphurous particles, the acid united with the sulphuric, as water with water: this shews its proximity to that as well as the nitrous.

"The sun (or light,) supposed to be a species of oxygen."

From this source it is presumed that our atmosphere is supplied with oxygen, which is absorbed by animal inspiration, as proved by the colour of blood in passing the lungs, &c. &c. &c. If not, from whence do it receive its supply? It may be asked, if the sun attracts oxygen how can it communicate it? I presume in the same mysterious way that the magnet communicates its magnetic power in the art of attracting, evidenced by the magnetic needle.

Note on page 10.

The blaze of a glass-house furnace will not extinguish a small fire, whereas the sun, by its attraction, soon extinguishes that in our parlour. This could not be, if, according to that great philosopher Sir Isaac Newton, "it were an immense solid mass of inextinguishable fire, distributing its light and heat to the planets, in proportion to their approximate situations." This idea, I conceive, savours too much of the appearance of a kitchen fire to be admitted as a fact.

G. C.

Page 11, *line* 7.

For, " what terrestrial thing contains the most oxygen ?" read, *hath the greatest affinity with oxygen.*

NOTE *on the last line of page* 11.

" *The human frame,*" it is this in the blood, that during respiration, decompose the atmospheric air, separate the oxygen and attract it to the blood, and appears to be the primum mobile of *heat and action* in the animal frame, &c. " Vegetable food, tends to calm the system, and to compose the mind," query, do it not, at the same time, from the quantity of ferrugineous particles it contains, supply the blood with the matter of attraction which decompose the air, by absorbing the oxygen? I think this is evident from *those animals* whose diet is *purely vegetable.* If so, those Physicians interdicting vegetable diet, are the undertaker's friends ! ! !

NOTE *continued from page* 13.

I presume the variation in the magnetic needle, in the same degree of longitude east and west, on the same parallel of latitude, arise from the proximity of land containing the matter of attraction.

Note on the visibility of light, from the third line, "utility," page 18.

It appears, that light do not become visible, until it arrives at, and incorporates with the atmosphere surrounding *each* globe, otherwise, the Heavenly bodies would be invisible to us, and to each other. Light passing through the intermediate dark space, forms the blue, after the same manner that a mixture of black and white produce that colour.

Observations on "transmutation" continued from page 22.

I am persuaded that prejudice has been, and is, the insuperable BARRIER to a just investigation on this subject, on taking an impartial survey of creation, you will perceive it exemplified in the following, being only a small part of evidence to the fact. Helmont took 200lbs. of earth, dried it in an oven, put it into an earthen vessel, moistened it with rain water, planted in it the trunk of a willow tree of 5lbs. weight; this be watered as occasion required, with rain, or distilled water, and to keep the adjacent earth from getting into the vessel, he employed a perforated plate of iron; after five years, he took out the tree, weighed it, and computing the leaves that fell in four autumns, he found it to weigh 169lbs. and about three ounces; having again dried the earth it grew in, he found it to want of its former weight of 200lbs. only about two ounces, so that 164lbs. of the roots, wood, and bark, which constituted the tree, seems to have sprung from the water. Upon analysis affording the like distinct substances, as another vegetable of the same kind—is not this transmuted water? the growth of hyacinth in glasses at windows is a repetition and illustration of the same. Grass and water, the food for herds and flocks, is transmuted from the vegetable into the *animal kingdom!!!* &c. &c.

G. C.

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ON THE OBJECT
OF
RELIGIOUS WORSHIP;
AND THE
PRE-EXISTENCE OF THE SON OF GOD:
ALSO,
The Cause, Necessity, Nature, Reality, and Importance of the Union of the Pre-existent Son of God with Human Nature;
HIS SPOTLESS LIFE, AND TRAGIC DEATH,
IN THE BEHALF
And for the Redemption of Man,
From the Accounts given us by Jesus Christ and his Apostles; as they are faithfully translated from the Greek.

By PHILIP DODDRIDGE, D.D.

To which is added,
AN HISTORICAL ACCOUNT
OF
TWO NOTABLE CORRUPTIONS OF SCRIPTURE,
In a Letter to a Friend,
BY SIR ISAAC NEWTON.

"It has, with too much truth, been asserted, that religious professions are a cloak for hypocrisy" — to which I answer, were there no GENUINE coin, there would not be counterfeits. The endeavour to counterfeit, proves the thing counterfeited is valuable. Hypocrisy, therefore, contrary to the intent of the professor, bears honourable testimony to the excellence of true religion. Perfection, beneath the stars, dwells not. I neither possess it myself, nor seek it in others; but that man, whose general deportment is not marked with sincerity and uprightness, in his attempt to impose on others, deceives himself.

"And now, O Father, do thou glorify me with thine own self, with the glory which I had with thee, before the world was.
John, chap. xvii. ver. 5.

"There is ONE GOD, and one Mediator between God and Man, the man Christ Jesus." &c.
Paul to Timothy, epis. 1. chap. ii. v. 5.

SECOND EDITION, WITH ADDITIONS.

To which is prefixed an Answer to some Remarks made by the Editor of the Evangelical Magazine, May 1812.